shaped". Accordingly, as used in the present application, an acicular particle does not need to taper to a point at one end thereof.

The Examiner's attention is also directed to paragraph [0074] of the present application, wherein it indicates that the volume average particle diameter of the peak on the short access side is used as the value D in the aspect ratio. Accordingly, Applicants submit that one of ordinary skill in the art would know how to measure the aspect ratio and the primary particle diameter of the auxiliary charging particles. Accordingly, the Examiner is respectfully requested to reconsider and withdraw the claim objections. The Examiner is reminded that U.S. Patent No. 5,731,119, hereinafter *Eichorst et al.*, also defines an aspect ratio of acicular particles. Accordingly, such terminology is understood by the those of ordinary skill in the art.

Art Rejections:

Claims 1-20 have been rejected under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent No. 5,652,649, hereinafter *Ikegawa et al.* in view of *Eichorst et al.* The Examiner alleges that *Ikegawa et al.* discloses a contact charger 2A having a contact charging brush 20A with brush fibers. However, the Examiner acknowledges that *Ikegawa et al.* does not teach or suggest that the contact charger has auxiliary charging particles with an acicular form.

To overcome this deficiency, the Examiner relies upon *Eichorst et al.* alleging that *Eichorst et al.* discloses a contact charger wherein the auxiliary charging particles have acicular forms. To support such allegation, the Examiner refers to column 5, lines 39-48.

However, *Eichorst et al.* discloses an imaging element such as a film that includes a support, an image forming layer, an transparent magnetic recording layer, and a transparent electrically conductive layer. In one example of the imaging element of *Eichorst et al.*, the imaging layer is a silver halide photographic film. See column 5, lines 29-33. The imaging element of *Eichorst et al.* uses a magnetic recording layer so that information can be recorded simultaneously into or read from the magnetic recording layer by techniques similar to those employed for traditional magnetic recording art. See column 1, lines 34-37. *Eichorst et al.* also discloses that a conductive layer can be used on such imaging elements in order to dissipate any accumulated charges. See column 2, lines 54-58.

In relying upon *Eichorst et al.*, the Examiner refers to column 5, lines 39-48, for the teaching of the acicular particles. The Examiner alleges that *Eichorst et al.* discloses a <u>contact charger</u> with auxiliary charging particles having acicular forms, However, *Eichorst et al.* merely discloses a contact layer on an imaging element having acicular particles dispersed in a film forming polymeric binder. See column 5, lines 39-48. At the sections relied upon by the Examiner, *Eichorst et al.* clearly does not teach or suggest that the particles are used with a contact charger.

Since *Eichorst et al.* teaches that the acicular particles are formed in a polymeric binder film for dissipating accumulated charges in a photographic film, there is no teaching or suggestion to use such particles on a charging brush having brush fibers for charging. Accordingly, there is no teaching or suggestion to use the particles disclosed by *Eichorst et al.* on the charging brush fibers disclosed by *Ikegawa et al.*

The Examiner is therefore respectfully requested to reconsider and withdraw the rejections of claims 1-20.

In the event that there are any questions concerning this Response, or the application in general, the Examiner is respectfully urged to telephone the undersigned attorney so that prosecution of the application may be expedited.

Respectfully submitted,

BUCHANAN INGERSOLL PC

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These search terms have been highlighted: **acicular particles**

The Interfacial Tension of Spherical and Acicular Colloidal Dispersions

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The interfacial tension of dispersions is important in a number of applications. Some examples include, the processing of ceramics from slurries, coating of paints, slot die casting of magnetic dispersions for high density magnetic media, and protein absorption onto liquid interfaces and cell membranes in biological systems.

The surface tensions of charged-stabilized silicon dioxide and titanium dioxide dispersions at different weight percents have been measured. We find that the interfacial tension first sharply decreases at low weight percents until it reaches a minimum and then increases at higher weight percents. At lower concentrations, the adsorption of **particles** to the interface decreases the total free energy of the system, which causes a decrease in the interfacial tension of the dispersion. At higher particle concentrations, the attractive capillary forces between **particles** at the surface increases the amount of work it takes to deform the surface, which increases the interfacial tension of the dispersion.

We have also studied the effect of **acicular** (rod-like shaped) **particles** on the interfacial tension. In particular, we have been interested in measuring the interfacial tension of **acicular** magnetic dispersions. Nematic liquid crystals, which consist of non-magnetic **acicular particles**, are known to have anisotropic surface tension that is dependent on the nematic tensor parameter. Multiple nematic phases - both prolate and oblate - are predicted for the magnetic dispersions in the presence of steady shear flow and external magnetic field. The presence of this structural order suggests exploiting the theory developed for nematic liquid crystals. In our work, we studied the surface order orientation and surface free energy of the magnetic dispersions and derived a general model of the anisotropic surface stress tensor for the magnetic dispersions. Using this

model, the influences of the external magnetic field and the shear stress on the surface properties of the magnetic dispersion were also investigated.